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ABSTRACT

A new self-report measure of impulsivity was developed to provide group administration and economy of scoring. An initial set of 26 items was constructed to tap various aspects of impulsivity, or the tendency to respond quickly without thinking. The items were administered to 346 male undergraduate students, primarily freshmen and sophomores. Item analysis indicated that 18 of the items could be legitimately combined into a single scale. Reliability (coefficient alpha) was .68. Results of a cross-validation study of 363 similar subjects showed that the 18 items had stable trace lines and a coefficient alpha of .67. Mean scores, standard deviations, and standard error of measurement were also virtually identical for the two samples of respondents. It was concluded that the new Impulsivity Scale had sufficient psychometric properties and practical advantages to warrant its use in educational and research settings. Moderate, rather than high, reliability may have been due to the four-point response scale, or the fact that impulsivity is a multidimensional rather than a unidimenstional construct. (The 18-item Impulsivity Scale is appended.) (Author/GDC)

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A New Self-Report Measure of Impulsivity

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An investigation was conducted to develop a new self-report measure of impulsivity that would offer ease of administration and economy of scoring. Toward this end, an initial set of 26 items was constructed to tap various aspects of impulsivity or the tendency to respond quickly without thinking. Item analysis of the responses of 346 subjects showed that 18 items could be legitimately combined into a single scale. Coefficient alpha was .68. Results of a cross-validation study of 363 subjects showed that the 18 items had stable tracelines and a coefficient alpha of .67. The mean scores, standard deviations, and standard errors of measurement were also virtually identical for the two samples of respondents. It was concluded that the new Impulsivity Scale has sufficient psychometric properties and pragmatic advantages to warrant its use in a variety of educational and research settings.

Various theoretical viewpoints construe impulsivity as a generalized predisposition to act on the spur of the moment and to respond quickly without thinking (e.g., Kipnis, 1971; Shapiro, 1965). The behavioral manifestations of impulsivity are many and varied. For example, impulsivity is assumed to be associated with increased arousal states and decreased cognitive functioning (Camp, 1977). As a consequence, impulsives may be disposed to be more aggressive than nonimpulsives and to retaliate more quickly when they are provoked (see Berkowitz, 1983). Impulsivity is also presumed to display itself as a preference for behaviors with high activity levels in general (Kipnis, 1971) and for thrill seeking behaviors in particular (Eysenck & Eysenck, 1963). Finally, impulsivity can be viewed as a tendency to seek immediate rather than delayed gratification (Mann, 1973).

Past research indicates that impulsivity has a direct relationship to a variety of social problems. For example, impulsive children have been shown to seek immediate gratification (Mann, 1973) and to focus on consequences rather than intentions in their moral reasoning (Schleifer & Douglas, 1973). If impulsives are less likely than nonimpulsives to conform to the values of society, there is also some evidence to indicate that impulsives are more likely to break the conventions and rules of society. For example, Thomas (1971) has shown that impulsives are more aggressive than nonimpulsives. Riddle and Roberts (1977) have also shown that the incidence of violent forms of delinquency is greater among impulsives than nonimpulsives.

Perhaps the most research attention has focused on the effects of impulsivity in educational settings. For example, this research typically

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shows that impulsives have fewer academically related skills than do nonimpulsives. Compared to nonimpulsives, impulsives have shorter attention spans (Campbell, 1973), poorer memories (Siegal, Kirasic, & Kilburg, 1973), weaker reading skills (Egeland, 1974), and fewer problem solving skills (Adams, 1972). The incidence of school related problems is also higher for impulsive than for nonimpulsive students. Compared to nonimpulsives, impulsive students are more likely to be hyperactive (Juliano, 1974) and to suffer from learning disabilities (Keough & Donlon, 1972). The prevalence of emotional disturbances (Finch & Nelson, 1976) and of being held back in school (see Messer, 1976) is also higher for impulsive than for nonimpulsive students.

Despite the obvious importance of impulsivity, applied uses and basic research in this domain have been hampered by the availability of suitable instruments to assess impulsivity. Of the available instruments, the most widely used are the Porteus Maze Test (Porteus, 1965) and the Matching Familiar Figures Test or MFFT (Kagan, Rosman, Day, Albert, & Phillips, 1964). Both tests are performance based, involve visual scanning tasks, and use time to completion and number of errors to index impulsivity. As a consequence, these particular tests are usually administered on an individual basis and require relatively constant monitoring. Moreover, there is some question as to whether these tests are reliable, with this problem being especially acute for the error measure of impulsivity. For example, Messer (1976) reports that the reliability of the error measure of the MFFT ranges from .09 to the .50s (see pp. 1029-1031.

The present investigation was conducted to determine whether a new measure of impulsivity could be developed to overcome some of the shortcomings of the available tests. Toward this end, several -- often conflicting -- goals were established. The theoretical goal was to develop a test that would tap the various domains or behavioral manifestations of impulsivity that were mentioned above. The pragmatic goal was to develop a self-report measure of impulsivity that would offer the advantages of ease of group administration and the economy of computer scoring. The empirical goal was to develop a test with decent psychometric properties (internal consistency and stability) in spite of the fact that several items would tap different domains of impulsivity.

Method and Results

Item Construction

An initial set of 26 items was constructed to tap various aspects of impulsivity-reflection. Some items were modified from existing subscales (Eysenck & Eysenck, 1963; Kipnis, 1971), while others were based on theoretical discussions of the impulsive personality (Berkowitz, 1983; Shapiro, 1965). More specifically, nine of the items were adopted from Eysenck and Eysenck (1963) and covered the areas of sensation

seeking and the tendency to respond immediately without thinking. Five items were modified from Kipnis (1971) and inquired about past behaviors and future preferences for behaviors that are marked by high activity levels. Of the remaining items, seven may be attributed to Shapiro's (1965) notion of the impulsive cognitive style, while five items related to delay of gratification (see Mann, 1973).

All items had a 4-point response format that varied from impulsive responding at one end to reflective responding at the other end. To reduce the artifact of common method variance, different response formats were employed. Specifically, twelve items asked subjects to indicate the frequency with which various descriptions typically applied to their behavior. Nine items asked subjects to indicate how strongly they agreed with various behavioral descriptions or courses of action. The remaining five items allowed respondents to select one of four alternative responses.

Item Selection

Subjects. The preliminary 26 item scale was administered to 346 male college students. All students were enrolled in introductory psychology classes at Northern Illinois University. The vast majority of the students were 18 to 19 year old freshmen and sophomores. The students had volunteered to participate in a session where a variety of questionnaires and tests were to be administered.

Procedure. The various questionnaires were administered on a group basis, with approximately 25 to 50 students participating in a given session. When it came time for the students to take the impulsivity test, they were handed (untitled) copies of the 26 item scale and IBM sheets on which to mark their answers. They were given the following instructions verbally:

> Please answer these questions as they usually pertain to you. For each question, please mark your response on the IBM sheet in the appropriate box.

Results. The responses for the 346 students were subjected to standard psychometric analyses to determine whether the 26 items -- or some subset of them -- could be legitimately combined into a single scale. Coefficient alpha, which treated each item as a parallel measure, was .60 for the set of all 26 items. Inspection of the initial item-total correlations, however, revealed that some items had unacceptable tracelines, e.g., correlations below .20.

Standard psychometric analyses were then conducted on a revised scale that included only those 18 items with the highest item-total correlations. These items are presented in the appendix, which also contains the results from the second item analysis. As the first listings in the right-hand margin of the appendix indicate, all 18 items had moderately positive correlations with the total scores. These

correlations ranged from .26 to .59 and had an average value of .40. Coefficient alpha for the revised 18 item scale was .68.

Cross Validation

Subjects. Approximately one year after the original study, the revised 18 item impulsivity scale was administered to 363 college students to determine the stability of the item-total correlations and coefficient alpha. The subjects in this cross-validation sample were drawn from the same population as the original sample and had the same demographic characteristics with regard to sex and age.

Procedure. The procedures for test administration were the same as those used in the original study.

Results. Once again, the results for the item analysis are given in the appendix. As the second listings presented there indicate, the item-total correlations ranged from .17 to .51 and had an average value of .39. Moreover, the average (absolute) difference in item-total correlations for the original and cross-validation samples was only .04. Coefficient alpha was .67 for the cross-validation sample.

Summary

Table 1 presents the summary statistics for both the original (Sample 1) and cross-validation (Sample 2) studies. As can be seen there, the findings were remarkably similar for the two studies. The mean total scores and standard deviations were virtually identical. These findings indicate that nearly 3 out of every 4 subjects tested were on the reflective side of the personality dimension. The average item-total correlations, coefficient alphas, and standard errors indicate that the psychometric properties of the impulsivity scale are relatively stable across samples and time (one year interval between studies).

Table 1
Summary Statistics for the Impulsivity Scale

	Sample 1	Sample 2
Number of Subjects	346	363
Mean Total Score	40.57	40.50
Standard Deviation	5.28	5.27
Mean Item-Total Correlation	.40	.39
Coefficient Alpha	.68	.67
Standard Error	2.99	3.03

Note. Total scores could range from 18 to 72, with higher scores indicating more impulsivity.

Discussion

The major purpose of this investigation was to develop a self-report measure of impulsivity that would offer ease of group administration and economy of computer scoring. The new Impulsivity Scale clearly satisfies these goals. The scale also has the advantage of being easily modifiable for use with subjects other than college freshmen and sophomores. For example, the reading level of the instructions and items is relatively low and clearly appropriate for high school and junior high students. With the possible exception of items 13, 15, and 17 (see appendix), the content of the items is also appropriate for these younger age subjects. Similarly, the scale would appear to be suitable for use with females as well as males. That is, since research with other impulsivity measures shows that girls are only slightly more reflective than boys (Messer, 1976), there are no a priori reasons to preclude the use of the new scale with samples of both sexes.

If the new Impulsivity Scale has a number of clear-cut pragmatic advantages, the evidence concerning its psychometric properties is somewhat mixed. On the positive side, the results obtained here show that the mean scores, standard deviations, item-total correlations, coefficient alphas, and standard errors of measurement were highly stable across samples and time. Moreover, coefficient alphas for the new scale are clearly higher than the internal reliabilities of the error measures of performance based measures of impulsivity (e.g., Messer, 1976). In addition, very recent evidence has been provided to demonstrate the validity of the Impulsivity Scale. Specifically, Hynan and Grush (in press) showed that high impulsive subjects identified by means of the new scale displayed more aggression in a laboratory experiment than nonimpulsive subjects.

Despite these strengths, the fact remains that the internal reliability of the new scale is not as high as the reliabilities of the latency measures of existing scales. In part, moderate rather than high reliability was built into the present scale by the use of 4-point responses and different formats. Four-point responses -- used in an attempt to ensure equal interval alternatives -- clearly restricted the range of item scores and thereby lowered item-total correlations and coefficient alpha. The mix of response formats -- used to minimize common method variance from which other scales artifactually benefit -- clearly had some impact on reducing coefficient alpha. For example, average item-total correlations for response formats based on estimated frequency, agree-disagree, and forced-choice were .42, .38, and .34, respectively. Nevertheless, it is important to note that at least one item with each of the different formats was among the four items with the highest average item-total correlations (see items 8, 12, 16, and 17 in the appendix). Without the benefit of common method variance, for example, these items compellingly suggest that impulsivity (item 16) can have behavioral (item 8), cognitive (item 12), and affective (item 17) components.

There is one other point that warrants brief comment. It could be argued that the reliabilities obtained here were only moderate because impulsivity -- both as a concept and as a measure -- is multidimensional rather than unidimensional in nature. In other words, the fact that item-total correlations and coefficient alphas were moderate rather than high could be attributed to the sampling of content domains and questionnaire items that were heterogenous rather than homogenous. This possibility obviously exists and cannot be dismissed. It is equally obvious, however, that the meaning of a homogenous or unitary scale is far from clear at the conceptual, methodological, and statistical levels (see Eysenck & Eysenck, 1963). Thus, it remains for future research to determine whether impulsivity is best construed and measured as a unidimensional or multidimensional phenomenon.

Conclusion

The development of any personality test is a difficult enterprise that often involves tradeoffs in satisfying the conflicting goals of conceptual purity, methodological rigor, pragmatic advantage, and psychometric standards. In the present case, attention paid to some frequently ignored methodological problems (common method variance) resulted in some lowered psychometric outcomes (coefficient alpha). Nevertheless, it would appear that the new Impulsivity Scale developed here offers many pragmatic advantages and has sufficient psychometric properties to warrant its use in a variety of educational and research settings.

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Appendix

Impulsivity Scale		Item-Total Correlation
1. Do you look for excitement?		.42
*a. almost always	c. occasionally	.44
b. often	d. almost never	
2. Are you carefree?		.40
*a. almost always	c. occasionally	.50
b. often	d. almost never	
3. Do you hit someone for calling you a name?		.37
*a. almost always	c. occasionally	.35
b. often	d. almost never	
4. Do you feel like saying, "I just did it, I don't know why."		.42
*a. almost always	c. occasionally	.43
b. often	d. almost never	
5. Would you do almost anything for a dare?		.48
*a. almost always	c. occasionally	.38
b. often	d. almost never	
6. When people shout at you, do you shout back?		.42
*a. almost always	c. occasionally	.37
b. often	d. almost never	
7. Do you stop and think things over before doing something?		.36
a. almost always	c. occasionally	.36
b. often	*d. almost never	
8. Do you do things on the spur of the moment?		.59
*a. almost always	c. occasionally	.51
b. often	d. almost never	
9. Which one do you think you would pick?		.26
*a. three dollars given to you today	c. seven dollars given to you in one week	.17
b. five dollars given to you in four days	d. ten dollars given to you in two weeks	
10. Do you like doing things in which you have to act quickly?		.33
*a. almost always	c. occasionally	.32
b. often	d. almost never	
11. If I had a free evening, I would rather stir up some excitement with friends than go to a movie.		.39 .38
*a. strongly agree	c. disagree	
b. agree	d. strongly disagree	

12. Do you say things quickly without stopping to think?			.47
	*a. almost always	c. occasionally	.49
	b. often	d. almost never	
13. The President of the United States should give the people what they want and not worry about the due process of law.			.27 .33
	*a. strongly agree	c. disagree	
	b. agree	d. strongly disagree	
14. When you sit down to study, are you easily distracted by other things?			.34 .41
	*a. almost always	c. occasionally	
	b. often	d. almost never	
15. Which activity appeals to you most?			.28
	a. chess	c. sky diving	.32
	b. baseball	*d. trying a new drug	
16. Which is the best description of your behavior?			.52
	*a. impulsive	c. careful	.48
	b. spontaneous	d. hesitant	
17. I have never had and would never have a sexual encounter with someone I do not know well.			.47 .44
	a. strongly agree	c. disagree	
	b. agree	*d. strongly disagree	
18. I have a short attention span.			.37
	*a. strongly agree	c. disagree	.37
	b. agree	d. strongly disagree	

Note. Item-total correlations are given in the right-hand margin, with correlations from Sample 1 (n = 346) listed first and correlations from Sample 2 (n = 363) listed second. Asterisks denote which ends of the response scales are indicative of impulsivity. Responses to individual items were scored from 1 to 4, with higher scores indicating more impulsivity.